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The Chenopodiaceae of the North American Flora

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The North American Chenopodiaceae have been treated previously in two monographic accounts. The first of these was that of Moquin-Tandon in De Candolle's Prodromus,† published in 1849. Moquin had access to a very limited number of specimens, for at that time scarcely any collections had been made in the western United States and northern Mexico, the parts of the continent in which the family is most extensively represented. The other monograph of the North American species, by Watson, appeared in 1874.‡ The latter author had the advantage of fairly ample collections, and his monograph is very useful even now, although many additional species have been described in recent years. Watson enumerated 83 species; the present writer, in the treatment of the family for the North American Flora,§ has recognized 223. The great increase in number of species in the last forty years is due partly, of course, to a different conception of specific limits, but chiefly to more extensive exploration. Several European and South American species have become naturalized only in comparatively recent years. It is not probable that the present number will be greatly increased unless from parts of Mexico still unexplored.

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† 13^2: 41–219. 1849.

‡ Proc. Amer. Acad. **9**: 82–126. 1874.

§ **21**: 3–93. 27 N 1916.

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This family is not an easy one for study, especially because of the great individual variation frequently found within a species. It is often extremely difficult to decide where specific lines should be drawn, consequently it will be many years before all American botanists agree upon a classification. Such a condition is not peculiar to the Chenopodiaceae, but it does seem more characacteristic of this family than of some of the closely related ones, such, for instance, as the Amaranthaceae, in which the species are clearly defined.

The present notes are intended to explain some of the more important changes in nomenclature which the writer has found necessary, as well as to illustrate by citation of specimens the material upon which some of the new species are based. In the case of new species founded upon a single collection, no comments seem necessary, the basis of segregation being explained sufficiently by the keys. In the course of the preparation of the account of the family, the writer examined, besides the material in the United States National Herbarium, all that in the Gray Herbarium and the herbaria of the New York Botanical Garden and the Missouri Botanical Garden. Certain material was lent, also, from the herbaria of the Field Museum of Natural History, the University of California, and Professor W. L. Jepson.

CHENOPODIUM L.

In none of the genera of the Chenopodiaceae are the species quite so perplexing as in *Chenopodium*, particularly in the group of *C. album* L. and its allies. This applies not only to the species of eastern North America, which are mostly adventive from Europe, but also to the western ones, which are endemic. The chief character relied upon for specific segregation has generally been leaf form, which, in any group of flowering plants, is seldom by itself a satisfactory criterion of species. In the present instance it is doubtless the best character available, at least in the case of the European species.

In Europe much attention has been devoted in recent years to a study of *Chenopodium*, a study based not only upon large series of herbarium specimens, but also upon cultivated pedigreed plants.

As a result an almost endless number of forms have been described and named. Many of these minor forms occur in North America, and any one who is interested in their segregation could find here an almost unlimited field for investigation. To the writer, however, most of the forms recognized abroad seem to be based upon such slight and inconstant characters that they scarcely deserve serious consideration, especially in America, where the flora as a whole is still so imperfectly known.

In Europe, too, many presumed hybrids have been described, not only hybrids between species but even between hybrids. Most of these are known only from cultivated plants. If hybridization is a common phenomenon in the genus it may well explain, partially at least, the obstacles to the determination of specific limits. It is unfortunately true that the North American species are still but poorly understood, and that a wholly satisfactory arrangement of them is apparently not to be secured at present.

CHENOPODIUM PALLESCENS Standley, N. Amer. Fl. **21**: 15. 1916

The plants referred to this species have passed as *C. leptophyllum* Nutt. and *C. subglabrum* (S. Wats.) A. Nels. They are most like the latter species in pubescence and habit, but are distinguished from both by having the pericarp firmly attached to the seed. The following specimens have been seen:

MISSOURI: Allenton, on stony hills, August 30, 1887, *Eggert;* near Pacific, *Eggert;* Webb City, *E. J. Palmer 1041;* Sheffield, *Bush 553*. OKLAHOMA: Lincoln County, 1895, *Blankinship;* Sapulpa, *Bush 489*. TEXAS: Dallas County, *Reverchon 818*. NEW MEXICO: Roswell, *Earle 326* (type).

CHENOPODIUM INAMOENUM Standley, N. Amer. Fl. **21**: 15. 1916

Although closely related to *C. leptophyllum*, which it resembles in general appearance, this species has the pericarp adherent to the seed, instead of free. It has a wide range, as shown by the following list of specimens examined.

OREGON: P Ranch, *Griffiths & Hunter 281*. MONTANA: Horr, *Mearns 3318*. WYOMING: Bitter Creek, Sweetwater County, *A. Nelson 3704a*. UTAH: Henry Mountains, *Jones 5695bi*. NEVADA: Ely, *A. E. Hitchcock 1237*. ARIZONA: Nagle's Ranch, *Jones 6050f.* NEW MEXICO: Mangas Springs, 1903, *Metcalfe;* Farmington, *Standley 7101.* CHIHUAHUA: near White Water, *Mearns 2286* (type).

CHENOPODIUM HIANS Standley, N. Amer. Fl. **21**: 16. 1916

Of the group of *C. leptophyllum*, but distinguished from all the related species by its ill-scented foliage. This character, which has been ignored heretofore, seems to be a very good one. The European *C. Vulvaria* L. has always been noted for its diagreeable odor, and several American species possess the same character. Their odor is quite different from that of *C. ambrosioides* L. and its allies. The type of *C. hians* was collected near Dulce, New Mexico (*Standley 8129*) and the species has been obtained by the writer at Ensenada (No. 10764) and Ute Park in the same state. A specimen from Bear Creek, near Eagle Peak, Wyoming, collected by Schuchert, is also referable here. The species is distinguished, also, by the erect calyx, which does not embrace the fruit closely as in related species.

CHENOPODIUM CYCLOIDES A. Nels. Bot. Gaz. 34: 363. 1902

The original collection, from Grant County, Kansas, is too immature to show the true characters of this species and might at first glance be referred to *C. leptophyllum* Nutt. The only other locality known for the plant is on sandhills in Dona Ana County, New Mexico, where it is abundant, according to Mr. E. O. Wooton, who has obtained excellent and ample specimens at two different times. The species is distinguished from all those of the *C. leptophyllum* group by its calyx, almost rotate at maturity and with ecarinate lobes, and by its bright red pericarp. Indeed, the general appearance of the mature plant does not at first remind one of the genus *Chenopodium.*

CHENOPODIUM NEVADENSE Standley, N. Amer. Fl. **21**: 16. 1916

A relative of *C. atrovirens* Rydb., but distinguished by having the seed adherent to the pericarp, and by the small leaves and seeds. The type is from Winnemucca Lake, Nevada (*Kennedy 1903*). Shockley's No. 542 from Candelaria also belongs here, besides one or two other Nevada collections examined.

CHENOPODIUM PRINGLEI Standley, N. Amer. Fl. **21**: 18. 1916

Allied to *C. Fremonti* S. Wats., to which the specimens have been referred, but distinguished by the form of the leaf blades, which are coarsely sinuate-dentate and only slightly lobed. In *C. Fremonti* the well-developed lobes are usually entire, at least the large terminal one. The type of *C. Pringlei* was collected near Dublán, Hidalgo, Mexico (*Pringle 9283*). Pringle's No. 6570 from Tule, Hidalgo, is the same species.

CHENOPODIUM NEOMEXICANUM Standley, N. Amer. Fl. **21**: 19. 1916

Related to *C. Fremonti* S. Wats., but differing in the adherent pericarp. The type was collected along Mineral Creek, Sierra County, New Mexico, by O. B. Metcalfe (No. 1413), and the species has been collected in the Chiricahua Mountains of Arizona by J. C. Blumer (No. 1409).

CHENOPODIUM ARIZONICUM Standley, N. Amer. Fl. **21**: 19. 1916

A segregate from *C. Fremonti*, distinguished primarily by having the pericarp adherent to the seed. It is distinct from *C. neomexicanum* in the size of the seed, scarcely more than half as large as in the latter. The following specimens have been seen:

ARIZONA: Santa Rita Forest Reserve, *Griffiths 5982* (type); Santa Rita Mountains, *Griffiths 6011;* near Tucson, 1911, *Wooton;* Rincon Mountains, *Blumer 3585*.

CHENOPODIUM AMARANTICOLOR Coste & Reynier, Bull. Soc. Bot. France **54**: 181. 1907

A species not reported previously from North America. It is a relative of *C. album* L., from which it is distinguished by its broad leaf blades and the red coloration of the upper leaves and inflorescence. Specimens from Thomasville, Georgia (*E. B. Taylor*, 1909) and Santiago de las Vegas, Cuba (*Abarca 2794*), are referred here. The native habitat of the plant is not known, but it has been found as a weed in France. It is sometimes cultivated as a foliage plant.

CHENOPODIUM VIRIDE L. Sp. Pl. 219. 1753

Chenopodium opulifolium Schrad.; Koch & Ziz, Cat. Pl. Palat. 6. 1814.

This is a well-known Old World species which generally has been known as *C. opulifolium*. *C. viride* L., however, was based upon a plate which evidently represents the same plant. The Linnaean name has been applied usually to the plant which is properly known as *C. paganum* Reichenb. So far as the writer knows, *C. viride*, in the sense in which the name is used here, has never been reported from North America, but the rather numerous collections cited below should all be referred to it. It differs from *C. album*, with which American specimens have been confused, in having the blades of the lower leaves as broad as long and, when dry at least, of a peculiar bluish-green color.

ONTARIO: Ottawa, *Macoun 5872;* Sandwich, *Macoun 54723*. RHODE ISLAND: Providence, July 31, 1892, *J. F. Collins*. MARYLAND: Cumberland, September 12, 1898, *Steele*. ILLINOIS: East St. Louis, September, 1894, *Eggert;* Rockford, 1880, *Bebb;* Mt. Carmel, July 12, 1894, *Schneck*. MISSOURI: Joplin, *Bush 2041*. TEXAS: Big Springs, June 11, 1900, *Eggert*.

CHENOPODIUM DACOTICUM Standley, N. Amer. Fl. **21**: 22. 1916

This species is related to *C. album* and *C. ferulatum* Lunell, but appears sufficiently distinct in the very coarse, loose pubescence, ill-scented foliage, and coarsely punctate seeds. The following specimens are in the National Herbarium:

SOUTH DAKOTA: Cedar Pass, *Over 6175* (type); Fall River Falls, *Rydberg* 964; Talus slopes, badlands, Washington County, August 4, 1914, *Over;* summit of Sheep Mountain, Pennington County, August 20, 1914, *Over;* badlands near White River, August 1, 1914, *Over;* White River, *Over 6211*.

The same plant apparently, doubtless adventive, has been collected in waste ground at Courtney and Sheffield, Missouri, by B. F. Bush (Nos. 7058A, 7066).

CHENOPODIUM PETIOLARE H. B. K. Nov. Gen. & Sp. **2**: 191. 1817

North American botanists have overlooked this species, but in Europe it has been generally recognized in recent years, and North

American material has been referred to it by European writers. It has been confused with *C. album*, to which it is very closely related, differing chiefly in the deeply lobed blades of the upper leaves, and the dull rather than lustrous seeds. It is widely distributed in the Southwest. Some of the numerous collections at hand are cited below.

COLORADO: Durango, *Baker, Earle, & Tracy 487*. NEW MEXICO: between Santa Fe and Canyoncito, *Heller 3787;* Chama, *Standley 6515;* Ensenada, *Standley & Bollman 11097;* Mangas Springs, *Metcalfe 216;* Mesilla, *Wooton 85*. ARIZONA: Willow Spring, *Palmer 586;* Flagstaff, July 3, 1891, *MacDougal*. NEVADA: Truckee Valley, *Bailey 969*. CALIFORNIA: Cameron's Ranch, *Schoenfeldt 3682;* Panamint Mountains, *Coville & Funston 813*.

CHENOPODIUM ARISTATUM L. Sp. Pl. 221. 1753

This is known definitely to occur in Siberia, but whether it is found in North America is still doubtful. It has been reported from Alaska and Mexico, and it is reasonable to expect it in Alaska, although none of the numerous collectors who have visited that region in recent years have found it. The occurrence of the species in Mexico seems very doubtful. The plant is so distinct that it scarcely seems probable that any other species would be mistaken for it. There is always the possibility of a misplaced label as an explanation of an otherwise inexplicable extension of range.

CHENOPODIUM INCISUM Poir.; Lamarck, Encyc. Suppl. 1: 392. 1810

?*Chenopodium graveolens* Lag. & Rodr. Anal. Ci. Nat. 5: 70. 1802.
Teloxys cornuta Torr. Pacif. R. R. Rep. 4: 129. 1857.
Chenopodium cornutum Benth. & Hook.; S. Wats. Bot. Calif. 2: 482. 1880.

Chenopodium incisum has a wide range, extending from southern Colorado, through Mexico and Central America, to South America, besides occurring in Africa. Probably it should be known as *C. graveolens* Lag. & Rodr., but the data afforded by the original publication of that species are insufficient for certainty. The plant of the United States has been known generally as *C.*

cornutum, but it differs in no way from the mass of Mexican material. Tropical forms have been referred commonly to *C. foetidum* Schrad., a different plant of which the writer has seen no North American specimens.

CHENOPODIUM DISSECTUM (Moq.) Standley, N. Amer. Fl. **21**: 26. 1916

Ambrina dissecta Moq. Chenop. Enum. 38. 1840.

Apparently this is a very rare plant. Before seeing material of it the writer presumed, from Moquin's description, that it was only a form of *C. incisum*. It is, however, quite distinct, being more closely related to *C. Botrys* L., as was apparent when the two following collections were discovered, both of which agree perfectly with the original description.

MEXICO: Saltillo, 1898, *Palmer 353;* Valley of Mexico, *Schaffner 437*.

CHENOPODIUM VAGANS Standley, N. Amer. Fl. **21**: 26. 1916

Chenopodium chilense Schrad. Ind. Sem. Hort. Gotting. **1832**: 2. 1832; Linnaea **8** (Litt.-Ber.): 25. 1833. Not *C. chilense* Pers. 1805.

Although most of the segregates from *C. ambrosioides* are too poorly marked to deserve specific rank, the one to which the above names have been applied seems to be an exception. It has apparently been overlooked by American botanists, the collections at hand having been identified mostly as *C. anthelminticum* L. *C. vagans* differs from all the forms of *C. ambrosioides* in its white-villous stems and in the conspicuously dentate or sinuate-pinnatifid leaves of the inflorescence. In fruit the plants have a characteristic appearance because of the very numerous, much elongate, slender spikes. The species is a native of Chile, and probably is adventive in California. The following specimens have been examined:

CALIFORNIA: Clinton, *Hansen 2020;* Ione, *Braunton 1185;* Tehama, *Ward 101;* Ukiah, *Chestnut 349;* North Fork, *Griffiths 4648;* Mendocino, *H. E. Brown 949;* Crystal Springs, *Elmer 4134;* without locality, 1860–67, *Rattan.*

A specimen "Ex Herb. E. & C. Faxon" collected at Boston, Massachusetts, in 1878, is probably *C. vagans*, but the plant is too young for definite determination.

CHENOPODIUM AMBROSIOIDES L. Sp. Pl. 219. 1753

This species, a native, presumably, of tropical America, is now widely diffused through the tropics of both hemispheres, and is naturalized in many regions far outside the tropics, especially in North America. As a consequence of its extensive range it exhibits much variation, but none of the forms seem worthy of specific recognition and few of them of rank as subspecies. *C. anthelminticum* L., which has been recognized in most North American manuals as a species or subspecies, does not seem to be worthy nomenclatural recognition. It is apparently nothing more than a poorly marked seasonal variation.

CHENOPODIUM FARINOSUM (S. Wats.) Standley, N. Amer. Fl. **21**: 28. 1916

Chenopodium murale farinosum S. Wats. Proc. Amer. Acad. **9**: 97. 1874.

Although described as a variety of *C. murale* L., this plant is far removed from that species and finds its nearest ally in *C. glaucum* L., differing from the latter in its large size and large glabrate leaves. In North America it seems to be confined to California, but, like some other Californian plants, it occurs also in western South America and in Paraguay. The following collections are representative:

CALIFORNIA: without locality, 1853–56, *C. Wright;* Santa Cruz Mountains, *A. E. Hitchcock 183;* Nigger Slough, Los Angeles County, *Braunton 558;* San Francisco, *Bolander 2489* (type).

CHENOPODIUM SALINUM Standley, N. Amer. Fl. **21**: 29. 1916

The above name is proposed for the native North American plant which has been referred to the Old World *C. glaucum.* The latter is rather sparsely adventive from New Brunswick to Virginia and as far west as Nebraska. *C. salinum* ranges from Manitoba and Alberta to New Mexico and Arizona, and has been collected in Missouri, where, doubtless, it is adventive. The North American plant has stout, dense, short, mostly axillary spikes of flowers, with sparsely villous rachises, and finely tuberculate seeds; the European plant has slender, elongate, interrupted, axillary and terminal spikes with glabrous rachises, and smooth seeds. While the differences may not seem very great, they are easily recognized when the two forms are compared. There seem to be no intermediate plants.

BLITUM L.

BLITUM VIRGATUM L. Sp. Pl. 4. 1753

An Old World species, closely related to *B. capitatum* L., but distinguished by the leafy rather than naked inflorescence, obtuse margin of the seeds, and copiously branched stems. It has escaped recognition by American botanists, but specimens in various herbaria were collected long ago in Massachusetts and New York, probably mere waifs. It seems to have become naturalized in the Northwest, having been found in Washington (Pullman, 1900, *Piper*), Oregon (Wallowa Mountains, 1897, *Sheldon 8846*), and Idaho (Ketchum, 1911, *Nelson & Macbride*).

ATRIPLEX L.

ATRIPLEX HASTATA L. Sp. Pl. 1053. 1753

Chenopodium subspicatum Nutt. Gen. **1**: 199. 1818.
Atriplex lapathifolia Rydb. Mem. N. Y. Bot. Gard. **1**: 133. 1900.
Atriplex carnosa A. Nels. Bot. Gaz. **34**: 361. 1902.

Recent writers upon the botany of the western United States have insisted that the plants of the Rocky Mountain and adjacent regions previously referred to *A. hastata* were distinct from the beach or salt marsh plant of the Atlantic and Pacific coasts. Their conclusions must have resulted from the paucity of eastern material for comparison. In the large series of northeastern specimens in the herbarium of the New England Botanical Club all the Rocky Mountain forms can be matched without difficulty; and it is easy to find European specimens, also, which agree in essential characters. In Europe names have been given to all the easily recognizable variations, and it would be possible to find American plants referable to many of the European forms. These, however, are based upon too inconsequential characters to deserve attention.

Probably it will never be possible for all botanists to agree upon a treatment of the species of *Atriplex* of the *A. hastata* alliance, and in the past both European and American authors have held widely divergent views as to specific limits within the group. The present writer has recognized eight species in North America, namely: *A. drymarioides* Standley, known from a single Alaskan collection; *A. zosteraefolia* (Hook.) S. Wats., of Washington; *A. alaskensis* S. Wats.; *A. Gmelini* C. A. Mey., ranging from northern California to Alaska; *A. joaquiniana* A. Nels., occurring from British Columbia to central California; *A. littoralis* L., *A. patula* L., and *A. hastata* L. All of these, except the first three, are closely related and are distinguished by comparatively slight variations. *A. Gmelini* and *A. joaquiniana* are probably sufficiently distinct. Of the last three, *A. littoralis* is doubtless the "strongest" species and when properly limited is easily recognized by its linear leaf blades and erect habit. The only American specimens seen that are referable to it are from the coast of Maine, except a few found as waifs in the vicinity of Philadelphia. Both *A. patula* and *A. hastata* seem to the writer to deserve specific rank. While no sharp line can be found to separate the multitudinous forms which are referable to them, the typical form of each represents a well-marked center of variation, which seems to merit more than subordinate rank.

ATRIPLEX ROSEA L. Sp. Pl. ed. 2. 1493. 1763

Atriplex spatiosa A. Nels. Bot. Gaz. 34: 360. 1902.

Although this Old World species has been found along the Atlantic Coast from New York to Florida, it is probably nowhere in this area more than a waif. In the west, however, its status is very different, for although it seems to have been introduced only recently, it has spread with amazing rapidity, its present known range extending from Washington to South Dakota, southern California, and northern Chihuahua. In many parts of its western range it is extremely abundant, so much so that in places it has been cut for hay. In parts of New Mexico it has every appearance of being a native plant, occurring in abundance many miles from a railroad. Its case is somewhat comparable to that of the Russian thistle, a European plant which for some unknown reason has found conditions in America particularly favorable for its spread. In the present instance, however, there seems to be no great harm involved, and the plant may even be beneficial if it is useful as forage. Probably within a few years it will have spread throughout the Great Plains region and the territory westward to the Pacific Coast.

The oldest western specimens in the National Herbarium were collected in Wyoming in 1897. The first Oregon specimens were obtained in 1901, and all those from other western states still later.

ATRIPLEX SACCARIA S. Wats. Proc. Amer. Acad. **9**: 112. 1874

Atriplex cornuta Jones, Proc. Calif. Acad. II. **5**: 718. 1895.

Among North American species this is remarkable in having strongly dimorphous fruiting bracts. In certain other species also the bracts vary greatly upon a given plant, but in none, except the abnormal *A. hortensis* L. and its allies, do these parts exhibit such striking variation as in *A. saccaria*. The name *saccaria* has been ignored by recent writers upon western plants. It was based upon specimens showing only the small fruiting bracts (the large ones had fallen off, doubtless); hence it is not remarkable that the species has been wrongly identified from the description, and that Mr. Jones once regarded it as a variety of *A. truncata* (Torr.) A. Gray.

ATRIPLEX SORDIDA Standley, N. Amer. Fl. **21**: 47. 1916

Of the *A. argentea* group, differing from that species in the sessile, wholly alternate leaves, and from *A. expansa* S. Wats. in the terete branches, coarse and loose pubescence, and smaller seed. The type was collected in the San Jacinto Valley, California, in 1880, by G. R. Vasey (No. 549). A collection from Santa Monica, California (*Parish 1124*), also belongs here.

ATRIPLEX MOHAVENSIS (Jones) Standley, N. Amer. Fl. **21**: 47. 1916

Atriplex expansa mohavensis Jones, Contr. West. Bot. **11**: 20. 1903.

This name applies to the common plant of central and southern California which has passed as *A. expansa* S. Wats. The latter, however, is restricted to the Rio Grande Valley of southern New Mexico, western Texas, and northeastern Chihuahua. The bracts of the Californian plant are sufficiently distinct to entitle it to specific rank, and the ranges of the two species are widely separated.

ATRIPLEX HILLMANI (Jones) Standley, N. Amer. Fl. **21**: 48. 1916

Atriplex argentea Hillmani Jones, Contr. West. Bot. **11**: 21. 1903.

This plant seems to have a limited distribution, being confined to Nevada and southeastern Oregon, so far as specimens show. It differs conspicuously from *A. argentea* in the form of the bracts and leaf blades. Representative collections are the following:

OREGON: Malheur, &c., *Cusick 1263*. NEVADA: Leonard Creek Ranch, *Griffiths & Morris 346;* Battle Mountain, *Kennedy 4001*, *A. E. Hitchcock 586;* Lemmon Valley, *Kennedy 2081*.

ATRIPLEX MINUSCULA Standley, N. Amer. Fl. **21**: 51. 1916

Most closely related to *A. pusilla* (Torr.) S. Wats., a species of eastern Oregon and northwestern Nevada, from which it is distinguished by its larger bracts, these subhastate and denticulate or crenulate, not ovate and entire. The following collections have been observed:

CALIFORNIA: between Tulare and Tulare Lake, 1892, *Palmer 2728* (type); Laton, *Kearney 33, 34;* near Poso, *Coville & Funston 1249;* without locality, 1872, *Torrey*.

ATRIPLEX PENTANDRA (Jacq.) Standley, N. Amer. Fl. **21**: 54. 1916

Axyris pentandra Jacq. Sel. Stirp. Amer. 244. 1763.
Atriplex cristata Humb. & Bonpl.; Willd. Sp. Pl. 4: 959. 1806.

In view of the fact that this plant was first described as a species of the Old World genus *Axyris*, it is perhaps not remarkable that its earliest name has been so long overlooked. More probably it has been neglected because its identity can be confirmed only by a consultation of Jacquin's illustration, which occurs in one of the rarest of botanical works.* This shows that the name *Axyris pentandra* applies to the common plant of southern Florida and the West Indies, heretofore known as *Atriplex cristata*.

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* Sel. Stirp. Amer. Pict. *pl. 235*. 1763.

ATRIPLEX GLOMERATA S. Wats.; Standley, N. Amer. Fl. **21**: 54. 1916

Founded upon Palmer's No. 1156, collected at Parrás, Coahuila, in 1880. The type specimen, in the United States National Herbarium, bears the previously unpublished name cited above. The plant is related to the Mexican *A. muricata* Humb. & Bonpl., but differs in having unappendaged bracts. Two additional collections belong here:

MEXICO: Coahuila, *Rose 3075;* Buena Vista, *Gregg 349.*

ATRIPLEX DAVIDSONII Standley, N. Amer. Fl. **21**: 57. 1916

This name is proposed for a plant closely related to *A. pacifica* A. Nels. (*A. microcarpa* [Benth.] D. Dietr.) and *A. Coulteri* (Moq.) D. Dietr., but distinguished from both by its dentate leaf blades. In the form of its staminate inflorescence it is intermediate between those two species. The following collections have been examined:

CALIFORNIA: Balboa, *Davidson 2951* (type); Long Beach, *W. F. Parish;* Los Angeles, *Braunton 680;* in 1884, *Nevin;* Colton, *Parry 287.*

ATRIPLEX SONORAE Standley, N. Amer. Fl. **21**: 62. 1916

An ally of the Mexican *A. Barclayana* (Benth.) D. Dietr., but separated by the very different fruiting bracts, these being united only to the middle, their margins green and deeply laciniate, and their sides sharply muricate. The following collections belong here:

SONORA: Empalme, *Rose, Standley, & Russell 12631* (type); Guaymas, *Palmer 671, 672, 673, 674, 677, 690.* SINALOA: Altata, November, 1899, *Brandegee.*

ATRIPLEX POLYCARPA (Torr.) S. Wats. Proc. Amer. Acad. **9**: 117. 1874

Atriplex curvidens Brandeg. Proc. Calif. Acad. II. **2**: 201. 1889.

The type of *A. curvidens*, in the herbarium of the University of California, has been examined by the writer through the kindness of Professor H. M. Hall. It exhibits certain differences from typical *A. polycarpa*, but none that are constant. The stems and bracts are attacked by a fungus, probably a rust, and it is suspected that the specimen is an abnormal one, deformed by the parasite.

ATRIPLEX OBOVATA Moq. Chenop. Enum. 61. 1840

Atriplex Greggii S. Wats. Proc. Amer. Acad. **9**: 118. 1874.

When Watson prepared his account of the North American Chenopodiaceae he seems to have overlooked Moquin's name. The type collection of *A. obovata*, obtained by Berlandier, was cited by Watson under his new species *A. Greggii. Atriplex Jonesii* Standley (*A. sabulosa* Jones, 1903, not Rouy, 1890) is very close to *A. obovata* and should, perhaps, be regarded as only a form of it. The two seem, however, to have separate ranges.

ATRIPLEX GARDNERI (Moq.) Standley, N. Amer. Fl. **21**: 66. 1916

Obione Gardneri Moq.; De Candolle, Prodr. **13^2**: 114. 1849.
Atriplex Gordoni Hook. Jour. Bot. & Kew Misc. **5**: 261. 1853.
Atriplex eremicola Osterhout, Bull. Torrey Club **25**: 284. 1898.

The name *Obione Gardneri* has been neglected by all American botanists, possibly because of an impression that the plant was of South American origin. The type locality is given by Moquin as "Ad La Platte," and the collector as Gardner. Hooker, however (*loc. cit.*), pointed out that the specimen was really obtained by Gordon along the Platte River in North America. A fragment of the original collection (*Gordon 251*) in the Gray Herbarium shows that it is the same as the plant described by Osterhout as *Atriplex eremicola*. Since Moquin never changed the specific name first applied, the present writer prefers to maintain it in its original form.

ATRIPLEX CANESCENS (Pursh) Nutt. Gen. **1**: 197. 1818

The authority usually given for the above combination is James, but this is incorrect. Nuttall first made the combination *Atriplex canescens* (based on *Calligonum canescens* Pursh), and although he described a different plant at the time he made the transfer of name, he must be credited with the authorship of the binomial.

The species has an unusually wide range and shows very appreciable variation in almost every character. The extensive series of specimens in the National Herbarium indicates, however, that it is impossible to recognize any of the several segregates that have been proposed. Locally some of the forms appear distinct enough, but when the whole series of specimens is examined all shades of intergradient forms are found.

ENDOLEPIS

ENDOLEPIS COVILLEI Standley, N. Amer. Fl. 21: 73. 1916

Atriplex phyllostegia S. Wats. Proc. Amer. Acad. 9: 108. 1874 (in part). Not *Obione phyllostegia* Torr. 1871.

Endolepis phyllostegia Rydb. Bull. Torrey Club 39: 312. 1912 (in part).

It is remarkable that a plant so distinct and apparently far from rare has been left so long unnamed, but the explanation is found in the fact that Watson confused it with a quite different plant, a true *Atriplex*. The original collection of *Obione phyllostegia* consists of immature and poorly prepared specimens, which, it now appears, are those of a presumably rare species renamed by Jones as *Atriplex Draconis*.* Because of the unsatisfactory material at his disposal, it is not surprising that Watson should have considered the Californian plants the same as *Obione phyllostegia*, and that consequently he should have drawn his description of *Atriplex phyllostegia* from them, chiefly. Probably as a result of this description Jones was led to describe his new species, *Atriplex Draconis*, and Rydberg, later on, to transfer *Atriplex phyllostegia* to the genus *Endolepis*.

SALICORNIA L.

SALICORNIA FRUTICOSA L. Sp. Pl. ed. 2. 5. 1762

Apparently referable here is a specimen from Cameron, Louisiana, collected by W. L. McAtee in 1910 (No. 1916), as well as Nash & Taylor's No. 1122 from Inagua, Bahamas. *S. fruticosa* is a well-known Old World species, occurring in southern Europe, western Asia, Africa, and Polynesia. It is distinguished from *S. perennis* Mill. by the short, conic hairs upon the seeds.

The common perennial *Salicornia* of the Atlantic and Gulf

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* Contr. West. Bot. 8: 40. 1898.

Coasts of North America and of the West Indies was referred by early writers upon American botany to *Salicornia fruticosa* L. In recent years all American botanists, following, apparently, the statements made by Watson in 1874,* have recognized the American plant as a distinct species under the name *S. ambigua* Michx. The present writer, however, can find no character by which to distinguish *S. ambigua* from *S. perennis*, a common Old World plant, and the one which formerly passed as *S. fruticosa* L. Watson stated that the American plant had pubescent seeds and the European glabrous ones, but in making this comparison the European plant he really had in mind was not the Linnaean species, in its proper sense, but a plant now known as *Arthrocnemum glaucum* (Delile) Ung. Sternb.

SALICORNIA DEPRESSA Standley, N. Amer. Fl. **21**: 85. 1916

An annual plant of southern California, distinguished from *S. europaea* L., as well as from *S. rubra* A. Nels., by its elongate, prostrate lower branches and small seeds. The following are the only collections seen:

CALIFORNIA: San Diego, 1899, *K. Brandegee* (type); near the Initial Monument, 1898, *K. Brandegee;* Coronado Sand Spit, *Chandler 4011.*

DONDIA Adans.

As treated in the North American Flora, this genus includes twenty species, five of eastern North America, the rest western. Seven species are described as new, three of them known only from Mexico or from barely outside that country. The species of this genus are difficult of determination, and a greater amount of herbarium material, as well as more extensive study in the field, will be necessary to obtain a wholly satisfactory treatment of them, if, indeed, such a treatment is possible. The species described as new seem to the writer to be based upon important differences; certainly they are fully as well marked as most of those heretofore recognized.

DONDIA DEPRESSA (Pursh) Britton; Britt. & Brown, Ill. Fl. **1**: 585. 1896

There seem to be no definite characters by which to separate from this *D. calceoliformis* (Hook.) Rydb. and *D. erecta* (S. Wats.)

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* Proc. Amer. Acad. **9**: 125. 1874.

A. Nels. The latter is said, by those who know it in the field, to differ strikingly in its prostrate habit, but in the herbarium no technical differences are discoverable, and the habital differences, of course, are not then apparent.

DONDIA MEXICANA Standley, N. Amer. Fl. **21**: 89. 1916

Most closely related to *D. linearis* (Ell.) Heller, a coastal plant of the West Indies and the eastern and southern United States, being distinguished chiefly by the much smaller seed. The following are the only collections known at present:

SAN LUIS POTOSÍ: Hacienda de Angostura, on alkaline plains, *Pringle 3788* (type). TEXAS: El Paso, June 12, 1895, *Plank*.

DONDIA FRUTICOSA (L.) Druce, List Brit. Pl. 60. 1908

Chenopodina Moquini Torr. Pacif. R. R. Rep. **7**^{3}: 18, 1858 (hyponym).
Suaeda intermedia S. Wats. Proc. Amer. Acad. **14**: 296. 1879.
Dondia conferta Small, Bull. N. Y. Bot. Gard. **1**: 280. 1899.
Dondia Moquini A. Nels. Bot. Gaz. **34**: 363. 1902 (hyponym); Abrams, Fl. Los Angeles 131. 1904.
Dondia Wilsonii Millsp. Field Mus. Publ. Bot. **2**: 297. 1909.

The synonyms cited above are only the more important ones based upon North American plants. The most common *Dondia* of the western United States, northern Mexico, the Bahamas and Cuba, the writer is wholly unable to distinguish from the Old World *D. fruticosa*. The West Indian plant seems quite the same as that of the western United States, and the wide distribution in North America seems to make more plausible the specific identity of the Old World and American plants.

The name *D. Moquini*, which has been much used in recent years, is a hyponym, as published by Torrey, for no adequate description was given. Strictly interpreted, the name should be typified by a Cuban specimen cited by Moquin, to which Torrey referred.

DONDIA RAMOSISSIMA Standley, N. Amer. Fl. **21**: 91. 1916

The plants segregated under this name have usually passed as *D. suffrutescens* (S. Wats.) Heller, a species ranging from western Texas and Chihuahua to Arizona, but they are distinguished by the slender, flexuous branches of the inflorescence and the flat leaves, these usually abruptly contracted at the base and apparently petiolate. The following collections belong here:

CALIFORNIA: Saratoga Springs, *Coville & Funston 304, 305;* Indio, June 10, 1907, *V. Bailey;* Calexico, December, 1901, *J. G. Holmes;* Death Valley, *Coville & Funston 193;* near Bakersfield, *Coville & Funston 1233;* Colorado Desert, 1869, *Palmer.* ARIZONA: Lees Ferry, *Nelson 62* (type). LOWER CALIFORNIA: La Paz, *Nelson & Goldman 7484;* Los Angeles Bay, *Palmer 13;* Seven Wells, Sacaton River, *Schoenfeldt 2887;* Gardners Laguna, *Schoenfeldt 2912.*

DONDIA TAXIFOLIA Standley, N. Amer. Fl. **21**: 91. 1916

The material referred here has been included usually in *D. californica* (S .Wats.) Heller. That species, however, has glabrous stems and leaves, while this is copiously pubescent throughout. The following specimens indicate its range:

CALIFORNIA: Newport, *Davidson 2990*; Santa Barbara, *Eastwood 152;* Long Beach, *Braunton 555;* San Nicholas Island, April, 1897, *Trask;* Playa del Rey, *Abrams 2490* (type); Santa Barbara County, *Torrey 461;* Santa Monica, *Nevin 659.*

DONDIA BREVIFOLIA Standley, N. Amer. Fl. **21**: 92. 1916

This, too, is a segregate from *D. californica,* differing in its copious pubescence. From *D. taxifolia* it is distinguished by the small flowers and much shorter leaves. Collections have been seen as follows:

CALIFORNIA: Newport, *Davidson 1779* (type); Balboa, *Davidson 2952;* San Clemente Island, *Trask 37.* LOWER CALIFORNIA: Agua Verde, *Rose 16601.*

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